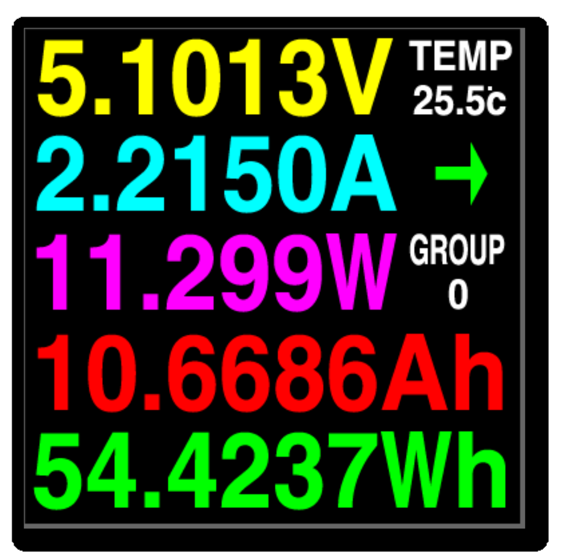
MAIN FUNCTIONS

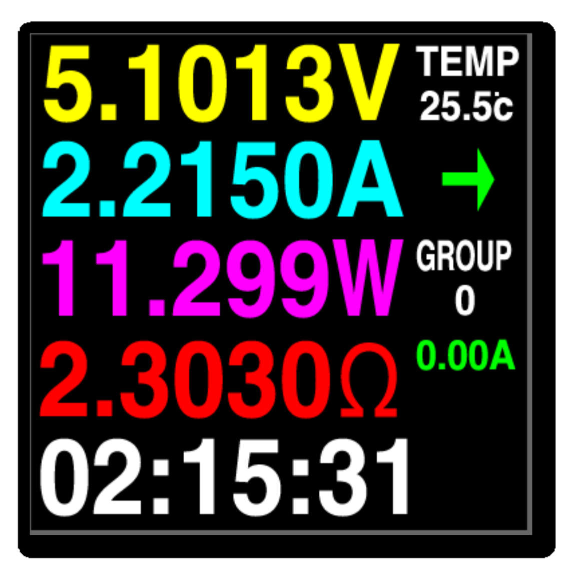


Function 1: Measurements of voltage, current, power, Ah, and Wh.

The top-right corner shows the temperature of the PCBA main board, which approximates the ambient temperature under no-load.

Below the temperature is a green arrow to indicate the direction of current and a group number to indicate which recording group is used to save the capacity. To shift among the recording groups, press and hold the button.

To clear the saved data in the current group, hold down the button and keep until the group is shifted back and the data is cleared. The same operation applies equally to Function 2.

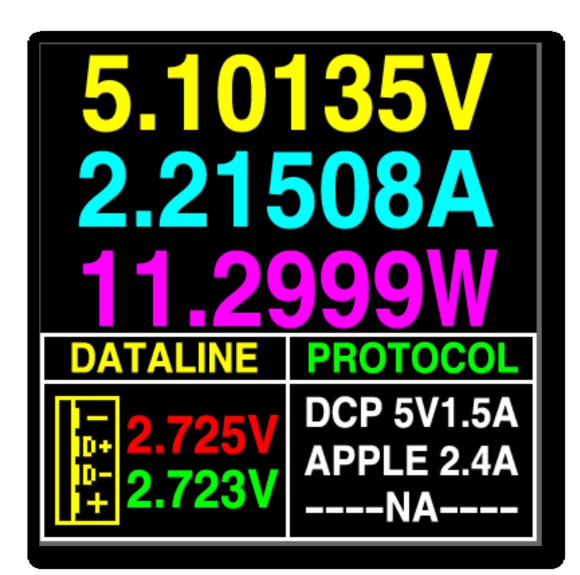


Function 2: Equivalent load resistance measurement and charging time display.

The upper part of the screen is the same as that in Function 1.

In the lower part, the equivalent load resistance is in red. For example, a value about 5Ω would be shown in red if a resistive 5Ω load was connected. The time elapsed in the process of charging is shown at the bottom in white. With a proper recording threshold, the charging time needed by the device to reach its full capacity can be easily obtained.

At the lower right corner is the recording threshold (in green) for charging time recording. The charging timer starts only if the current exceeds the threshold.



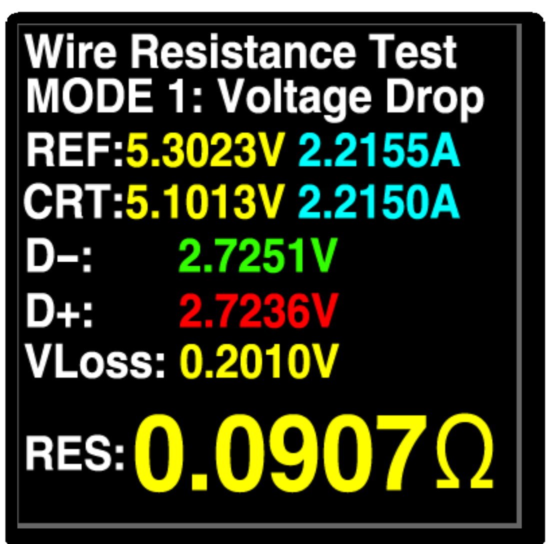
Function 3: High precision measurement of averages and fast-charging protocol recognition.

The average voltage, current, and power with high precision are shown in the upper part of the screen.

In the lower-left part is the D+D- voltages, while in the lower-right part is the recognized fast-charging protocols.

For ZY1276, the fast-charging triggering mode can be arrived from Function 3 by pressing and holding the button.

For other models without the triggering feature, holding down the button will give the number of voltages and currents that are taken average and the number of digits of the averages



Function 4: Measurement of cable resistance.

REF: The reference values used in Mode 1 of measurement.

CRT: The current values of the voltage and current.

VLoss: The voltage loss under the testing current.

After a load with a current greater than 0.5A is connected, press

and hold the button to enter Mode 1 and the reference data will be automatically saved. To switch to the Mode 2 (4-wire (Kelvin) resistance measurement), press and hold the button when under no-load.



Mode 1: 2-wire (voltage drop) resistance measurement.

It is suggested to perform the measurement using a 1-2A constant current source.

At first, connect the power supply to the load via the USB tester to make a measurement without the cable. Press and hold the button to save the reference values.

Then insert the cable between the power supply and the USB tester and the cable resistance will be given directly.



Mode 2: 4-wire (Kelvin) resistance measurement.

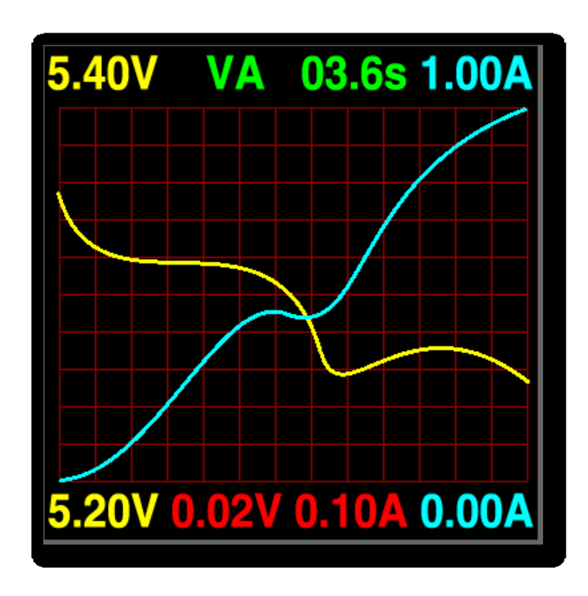
With another tool as shown in the figure, the cable resistance can be measured without using a constant current load.

The principle is to measure the voltage drop of the cable through the D+D- voltage. Note that some kinds of USB ports might interfere with the measurement, so it is better to pull out the cable plug a little bit so that the D+D- pins are detached while the other

pins keep attached.

The cable resistance is usually greater than 0.05Ω. A gray result means that over range has happened. Check other values to see whether they are normal. A result less than 0.05Ω by the 4-wire method indicates that D+D- have been interfered with. Try to pull out the cable plug slowly till the result becomes normal.

Here are some empirical data of allowed currents for different cable resistances: <0.1Ω ~ 3-5A , 0.1-0.2Ω ~ 2-3A , 0.2-0.5Ω ~ 1-2A , 0.5-1Ω only for data transmission.



Function 5: Simplified oscilloscope of V/A curve, D+/D- voltage curve, and offline curve.

The values in the four corners: Two pair of maximum and minimum values that define the ranges for two vertical axes, respectively.

The green text at the top: "VA" and "D+D- " corresponds to the voltage and current curves and the D+D- voltage curves, respectively. "READ" indicates that the data of offline curves are being read, while "DONE" indicates that the offline curves have been plotted.

03.6s: The time interval for the division of the horizontal axis.

The shortest time interval is 0.1s, i.e., 100 samples per second. There are eight time intervals (0.1s, 0.2s, 0.5s, 1.0s, 3.6s, 5.0s, 10.0s, and 20.0s) which can be selected in the system settings.

The text in red at the bottom: The respective sizes of the intervals

of the left voltage axis and the right current axis.

An automatic range will be used when the curves are plotted.

The yellow curve corresponds to the left axis, while the cyan one corresponds to the right axis. The overlap of two curves is plotted in white.

To shift among the V/A curve, D+/D- voltage curve, and offline curve, press and hold the button.

Each time a curve is saved for offline use, the new data will overwrite the oldest data saved before.



Function 6: Voltage, current, and power display in huge font.

The large font display makes reading and taking photos very convenient. Any other irrelevant parameters will not be displayed.

Press and hold the button allows the screen to be rotated in four directions.

SYSTEM SETTINGS

To access the system settings, press and hold the button before connecting to the power supply.



In the system settings menu, click the button to move the cursor to next item, and hold down the button to access the highlighted one.

The parameters can be adjusted by clicking and saved by holding down the button. You will go back to the main menu once the parameters has been saved.

To excutate those items without parameters, e.g., “Factory Reset”, press and hold the button. Clicking the button will return to the main menu.

ZY127xV3.33-01234: The first part is the hardware model and the software version. The latter part is the power-on count. To exit system settings, press and hold the button when this line is highlighted.

+/- By YZXSTUDIO +: A switch for increasing/decreasing the parameters. For example, to decrease the brightness of screen, hold down the button and then enter “Disply Brightness” to lower it.

Display Brightness: The brightness level of the active display.

Standby Brightness: The brightness level of the standby display. The screen can be turned off to save energy by setting the

brightness level to zero.

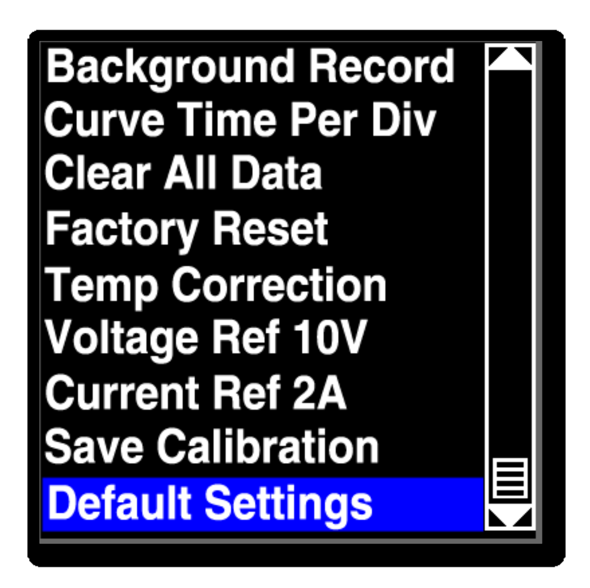
Backlight Timeout: The time elapsed before the screen enters the standby mode. One can set the timeout to zero to prevent the USB tester from entering standby mode.

Language And Fonts: Choosing the display language (English and Chinese are available) and selecting the font size.

Serial Data Upload: Setting the period and data format for the serial data upload process. For data format, both ASCII and HEX are available. Setting the period to zero can disable the upload function.

It can be used for curve plotting or data analysis when connected to a computer. Pease read the serial data upload tutorial for details.

Record Threshold: A threshold to prevent the USB tester from continuing to record the capacity and the charging time when the trickle charging mode starts in the final stage. For example, if the trickle current, which maintains the battery at its fully charged level, is 0.08A, it is reasonable to set the threshold to 0.10A. Once the full capacity is reached, the USB tester will stop recording to avoid any interference from the standby current.



Zero Current Ref: Calibrating the USB tester to ensure a zero no-load current. Only available for the model ZY1276.

Background Record: The total time interval for the background recording process.

Curve Time Per Div: The time interval per

division on the horizontal axis for the curve plotting.

Clear All Data: To clear all the data of the recording groups and the offline curve. Note that the system settings will not be cleared.

Factory Reset: To restore the calibrated parameters and other configurations to factory settings.

Temp Correction: To calibrate the temperature displayed in the upper-right corner.

Voltage Ref 10V: After a high precision 10.0000V voltage is input under no-load, press and hold the button to start the voltage calibrating by regarding this voltage as a precise 10V.

Current Ref 2A: After connecting to a load of 2.00000A, hold down the button to calibrate the USB tester by regarding this current as a precise 2A.

Save Calibration: To save the current calibrated parameters and other configurations as new "factory" settings. CAUTION: The initial factory settings will be overwritten. NOT recommended for beginners.

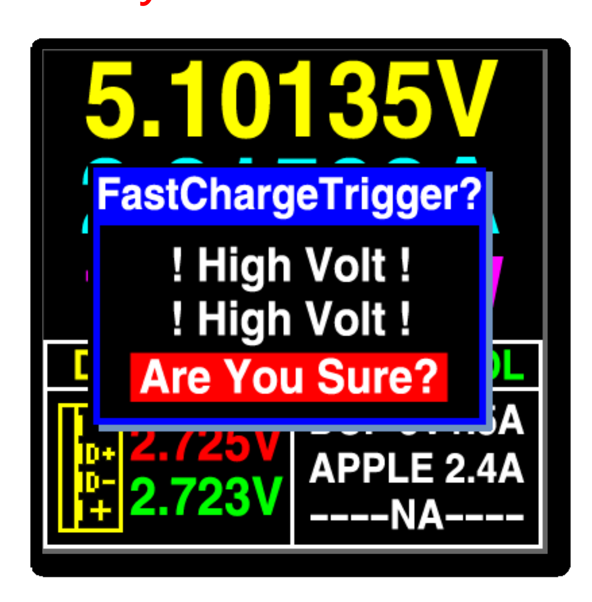
Default Settings: To restore to the default settings without any calibration. CAUTION: It can only be used to initialize the tester. NOT recommended for beginners.

If the voltages and currents are not accurate, try to restore to the factory settings. It is NOT recommended to calibrate by yourself. Things may get worse. Please contact us via yzxstudio.taobao.com to get free calibration service or professional instructions.

FAST-CHARGING TRIGGERING

This function is ONLY available for ZY1275 or ZY1276. Fast-charging Triggering could induce a high output voltage.

CAUTION: DO NOT connect to any equipments without sufficient permissible voltage! Most mobile phones without fast-charging feature will be destroyed when 9V voltage is input via the USB meter! We shall not be responsible or liable for any loss or damage of any kind incurred in the above way.



In Function 3, a confirmation dialog will pop up when the button is held down. Please ensure that the USB tester has not any load connected before moving to the third item "Are You Sure?" . Then hold down the button to access the fast-charging triggering mode.

A list of fast-charging protocols will be shown on the screen. Click the button to shift from one to another and hold down the button to apply the protocol selected.

AUTO Detect Finish
APPLE 2.4A
SAMSUNG 5V 2.0A
BC1.2 DCP 5V 1.5A
QC3.0 5V 9V 12V 20V
HUAWEI FCP 9V 2.0A
SAMSUNG AFC 9V 1.67A
Type–C 3.0A

AUTO Detect: Automatically detect the supported fast-charging protocols

The supported protocols or output voltages are in green. Those unsupported protocols or output voltages are in red. The cyan color is used when only its old

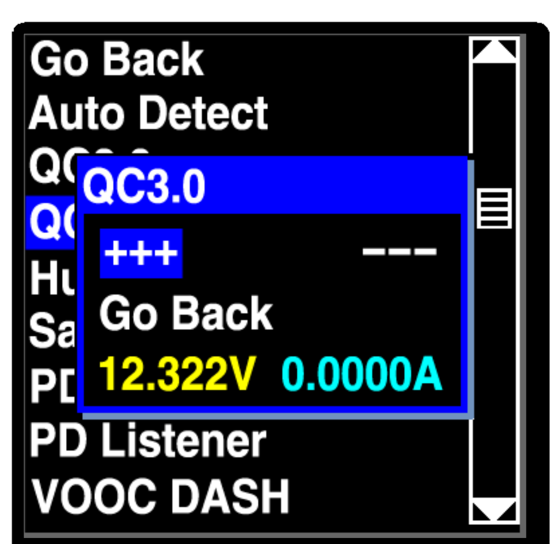
versions (upward compatible with the newer) of the protocol are supported. A "AUTO Detect Finish" appears when the detect process is over. Click the button to return.



QC2.0: Qualcomm Quick Charge 2.0 protocol.

Click the button to shift among several fixed voltages allowed by the QC2.0 and then hold down the button to confirm the request.

The actual values of output voltage and current are shown at the bottom of the dialog box.



QC3.0: Qualcomm Quick Charge 3.0 protocol.

Click the button to choose between increasing and decreasing the output voltage and hold down the button to increase or decrease it continuously.

If the output voltage cannot gradually change in 0.2V step, it can be concluded that the power supply does not support the QC3.0.

Huawei FCP: Huawei HiSilicon Fast Charging prorocol (9V2A).

Samsung AFC: Samsung Adaptive Fast Charging protocol (9V1.67A).

A dialog box will pop up when one of the two protocols is requested by holding

down the button. If the output voltage cannot reach 9V, neither FCP or AFC is supported. To exit these power delivery modes, hold down the button.



PD Trigger: Triggering via the Power Delivery protocol.

If the list of voltages and currents does not appear, remove the USB tester and plug it back in.

CAUTION: A Type-C plug has two orientations. The PD triggering function works only when the Type-C plug in the receptacle of the USB tester is in one specified orientation. The PD triggering will not work and the screen will not light up in the reverse orientation. Just flip the Type-C plug when the screen keeps dark.

Once PD communication proceeds, a full list of the supporting voltage and current group from PDO will be shown on the left-side.

The voltage and current group being requested is in yellow. Once the request is accepted, it turns purple.

On the right-side, there are, from top to bottom, the Type-C current level supported, the total number of Source PDOs, the PDO number referred to by the RDO, the output voltage and current requested by the above-mentioned RDO, and the current D+D- voltages.

The output voltage and current measured and the times of communications (in white) are shown at the bottom.

Click the button to select one group of PDO voltage and current and hold down the button to trigger it.

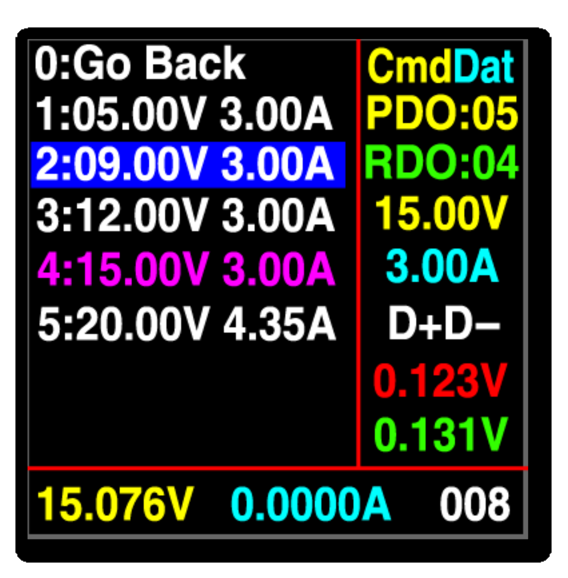
To exit the PD triggering function, move to "Go Back" and then press and hold the button.

PD Listener: Power Delivery listening and analyzing.

By this function, the PD power negotiation between PD adapters and other PD devices can be captured and analyzed, which is suitable for engineers to debug for better R&D.

It is suggested that the Type-C plug orientation should be first determined via PD triggering function before using the PD Listener function.

The screen will not light up until another PD device is connected to the USB tester via a USB Type-C cable. Remember to flip the plug in the receptacle of USB tester if the screen does not light up yet.



The list of supported power capabilities can be displayed by clicking the button. The output voltage and current acquired through the RDO is shown in the right side.

To exit the PD listening function, hold down the button.

CAUTION: PD listening or PD triggering, if not exited last time, will be activated again when powered up. To avoid it, remember to exit

these two modes (by pressing and holding the button) before the USB test is powered down.



VOOC DASH: OPPO's VOOC Flash Charge (also called OnePlus's DASH Charge).

Because the OPPO or OnePlus's original adapters always detects whether the cable is original, it is necessary to use an original cable via which the adapter and the USB meter are connected.

Once the original cable is ready, hold down the button to enter this mode and then connect a 2A load to the tester. If the "VOOC DASH" displayed on then screen turns green from red, the triggering succeeds. If the current can reach 4-5A while the output voltage remains about 5V, the "VOOC DASH" mode is triggered successfully and your adapter is a genuine one.